

## **Historic, Archive Document**

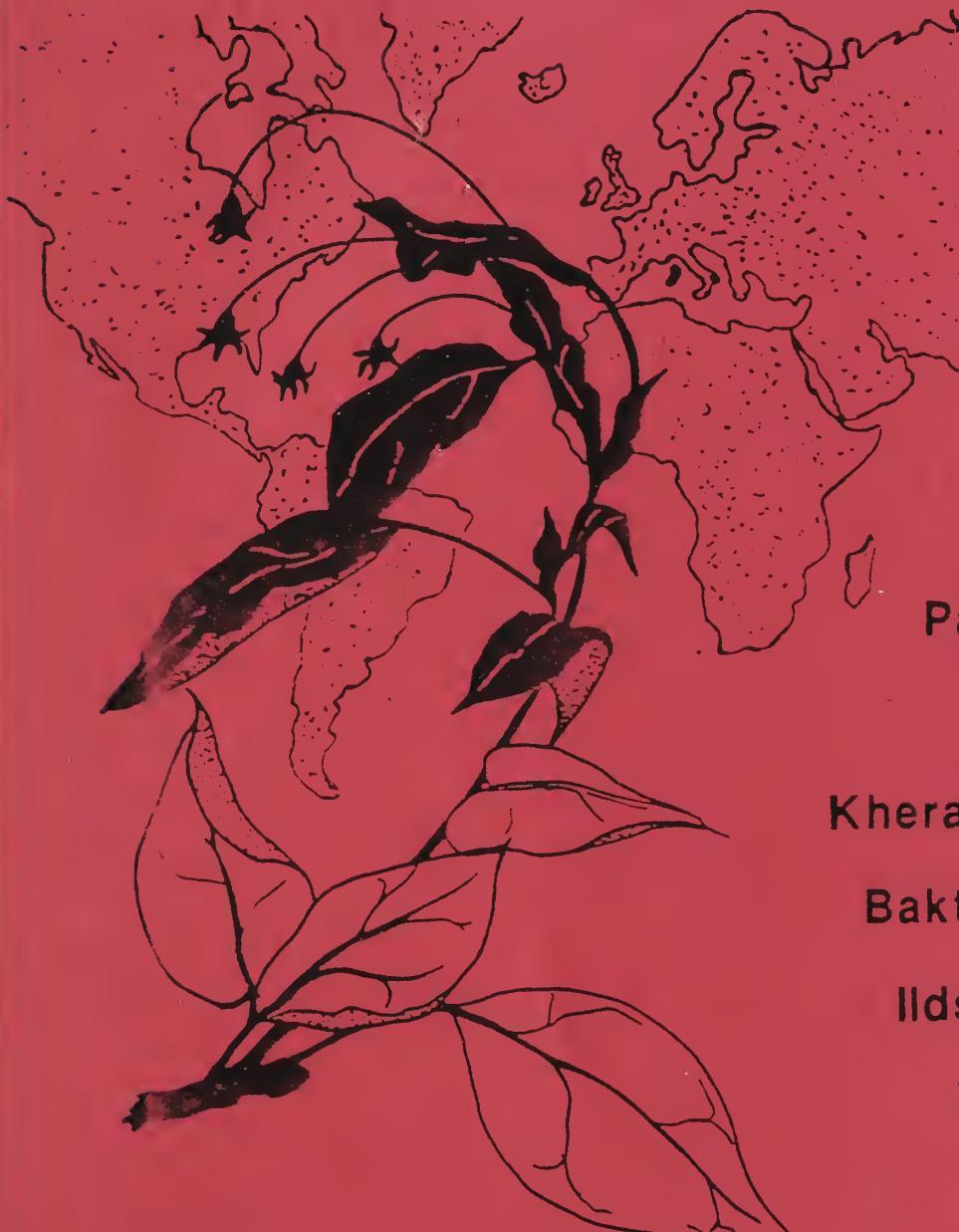
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# NEWSLETTER



JANUARY 1992



Ognen prigor

Bacterievuur

Feu bacterien

Ates yanikligi

Colpo di fuoco

Zaraza ogniosa

Paerebrann Spala

Fuego bacteriano

Kherakhon Paronpest

Bakteriozna plamenjaca

Ildsot Feuerbrand

Vaktiriako kapsimo

Lafha nareya

INTERNATIONAL WORKING GROUP  
ON FIRE BLIGHT RESEARCH



INTERNATIONAL WORKING GROUP  
ON  
FIRE BLIGHT RESEARCH

**NEWSLETTER**

from the

Plant Protection Commission  
International Society for Horticultural Science

in cooperation with

U.S. Deciduous Tree Fruit Disease Workers

and

European & Mediterranean Plant Protection Organization

**JANUARY 1992**

**United States Department of Agriculture**  
Agricultural Research Service

**Appalachian Fruit Research Station**  
Kearneysville, West Virginia, USA

### Letter from the Editor

During 1991, no reports have been received of new introductions of fire blight in any major pome fruit producing countries. Thus, Australia, Chile, South Africa, Japan, China, Spain, and the Po and Adige Valleys in northern Italy are still free of this bacterial disease. The only positive reports, received officially from EPPO in Paris, were that fire blight has been recorded in Bermuda, Haiti, and Zimbabwe. Together with Lebanon (1988) and Armenia (1990), there are no details available on the occurrences of fire blight in these five countries.

During the last few years, it has become increasingly more difficult, costly, and time consuming to report all the new literature on fire blight in the newsletter. This year's issue is late going to press and does not include any new publications. At the upcoming workshop in Athens, Mr. Gary Lightner, Computer Specialist, at our Appalachian Fruit Research Station will discuss methods of accessing literature stored in our complete fire blight literature file through various computerized methods. Starting in 1993, we may possibly decide to publish the most significant new publications in the newsletters. The subject will be thoroughly discussed at the workshop. We are looking forward to seeing everyone in Athens.

Sincerely,

TOM VAN DER ZWET  
Secretary,  
North American Section  
International Working Group  
on Fire Blight Research

# **COUNTRIES WITH FIRE BLIGHT**

<b>Year</b>	<b>Number</b>	<b>Countries</b>
> 1900	2	USA and Canada
1919	3	New Zealand
1943	4	Mexico
1957	5	England
1962	6	Egypt
1966-70	9	Netherlands, Poland, and Denmark
1971-80	12	Belgium, France, and Germany
1982	13	Luxemburg
1984	14	Cyprus
1985	16	Israel, Turkey
1986	20	Sweden, Norway, Ireland, and Greece
1987	21	Czechoslovakia
1988	22	Lebanon
1989	23	Switzerland
1990	27	Armenia, Bulgaria, Yugoslavia, and Southern Italy
1991	30	Bermuda, Haiti, and Zimbabwe

## **PRESENT STATUS AND NEW OCCURRENCES OF FIRE BLIGHT**

### **TURKEY**

In general, the incidence of fire blight on pear was lower than usual. The full bloom period in Korkuteli, Antalya was cool. Fire blight of apple does not appear to be of a major problem in Turkey. Study on epidemiology and control of fire blight is continued. Growers who applied a spray schedule through bloom with copper oxychloride and maneb mixture and pruning of infected parts were able to maintain good control of fire blight.

I think it is very difficult to make a distribution map of fire blight for Turkey. Fire blight is everywhere. If you have a susceptible quince tree or pear tree even in home gardens, it is very easy to see fire blight symptoms from June.

*Timur Momol  
Antalya*

### **NETHERLANDS**

The year 1991 was an average year concerning fire blight in the Netherlands. Due to the reasonable large amount of fire blight infections in 1990, there were quite a lot of overwintering cankers. In spring 1991, these cankers became active and caused infection in mainly hawthorn. The cold spring prevented a fast further spreading of the disease. When the temperature rose in July, most hostplants did not bloom anymore and escaped infection. In apple, fire blight incidence was very low and in pear there were only scattered infections in a number of orchards. No serious problems were reported.

*Rien van Teylingen  
Wageningen*

### **GREECE**

Mild symptoms of fire blight appeared on the usual hosts in Greece (pears, apples, wild pears and quince). No infections on other hosts (hawthorn, pyracantha, cotoneaster, etc.) were observed. The weather conditions were normal. Heavy shoot and fruit infections were observed in some areas in northern Greece, after light hailstorm occurrence.

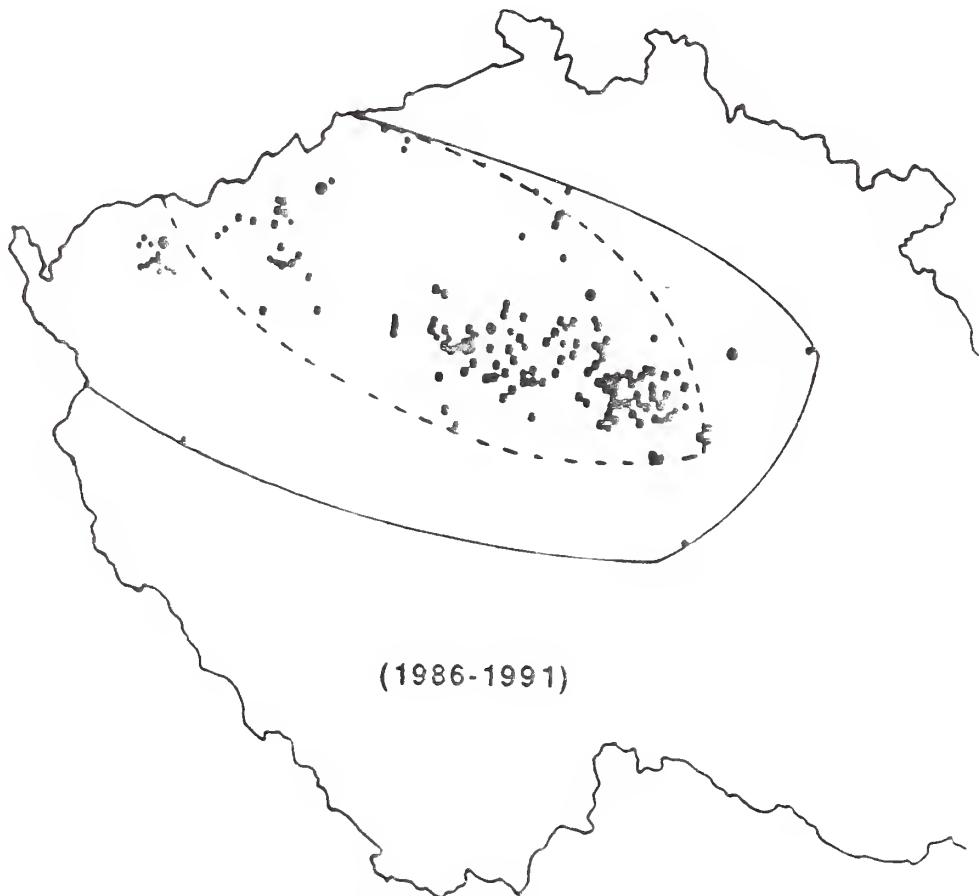
*Peter Psallidas  
Kifissia (Athens)*

## CZECH REPUBLIC

In 1991, fire blight occurrences were determined in 27 localities in Western and Central Bohemia. In 25 cases the attacked trees were hawthorns, in one case apple and in one case pear. These findings were mainly situated in places where fire blight had already occurred in previous years.

According to the results of weather analysis, the year 1991 in Bohemia was the less favorable for fire blight epidemic development in the last eleven years (1981-1991). This is due to an unusually long period of low temperatures in the first half of the growing season.

*Vaclav Kudela  
Ruzyne (Prague)*



Distribution and spread of fire blight in the Czech Republic

## POLAND

Fire blight was not recorded in any new places of the country. Its activity was generally low. In most regions, the weather was cold during bloom and early growth of shoots of apples, pears and hawthorns. Very few infections of apples and hawthorns were found.

*Piotr Sobiczewski  
Skiernewice*

## EGYPT

Due to the weather conditions during the 1991 season, mild infection with fire blight had occurred to pear trees in most growing areas. No disease incidence was noticed on other rosaceous plants or new regions.

*M.K. El-Kazzaz  
Kafr-El-Sheikh*

## GERMANY

In the northern part of Germany (Schleswig-Holstein), there was dependent on a very early blossom-phase correlated with high temperatures a massive attack on apple blossoms, so that the harvest was markedly reduced. Later on only weak infections were found in the typical windbreaker hedges on hawthorn and Cotoneaster varieties. A very low incidence of the disease was found in the other northern areas of the western part of Germany. In the South (Rheinland-Pfalz, Baden-Wurttemberg) sporadic focuses were observed because of cool weather in May/June during blossom period and very dry conditions later on. Only in the Neckar/Main area between July until October a strong attack was found on apple (Summerregent) and pears (Williams, Clapp's, Gute Luise, Gellerts) during a warm humid period, so that two pear orchards had to be eradicated. Also ornamentals, especially Cotoneaster salicifolius floccosus and hawthorn were attacked.

*Wolfgang Zeller  
Dossenheim (Heidelberg)*

In 1991 in the eastern part of Germany only some small outbreaks of fire blight occurred. Apple, pear and hawthorn were attacked. In Saxonia, a pear orchard (30 ha) must be eradicated because of fire blight incidence,

*Klaus Naumann  
Aschersleben*

## IRELAND

The disease was diagnosed only twice during 1991 - on plants of Sorbus aria and Cotoneaster salicifolius from two Dublin suburbs. The diseased plants were destroyed. Weather conditions were not favorable to the development of the disease during 1991. Blossom blight has never been observed here.

**Patrick Walsh**  
*Dublin*



Location of fire blight in the Republic of Ireland.

## FRANCE

A severe frost in April has induced secondary bloom in a number of pear orchards, as well as a reduction in sprays and visits during the growing season, linked with the absence of crop. This lead to some severe attacks in autumn (sometimes as late as late October).

The activity of the disease is estimated as high (worse than 1990) in pear in most of the contaminated areas. Numerous secondary blossom infections on apple (Golden Delicious) have been noticed.

A new contaminated zone was reported in August: 40 km north of Lyon in two Passe Crassane (pear) orchards. These were young infections. The orchards were destroyed soon (attempt of eradication).

An unusual indirect symptom of fire blight in the orchard seems to have been common in 1991; a die-back of the tree (apple due to a complete necrosis of the rootstock (origin of the infection usually unknown, but not originating from the nursery). This is a very destructive form of the disease.

*Jean Pierre Paulin  
Beauconze (Angers)*

## CYPRUS

The weather conditions during the 1991 pear blooming period were not favorable for fire blight development. Infections were almost unnoticed. Later on, in certain areas, during apple bloom, they favored damaged on the susceptible apple cv. "peas good non-such".

On pear, fire blight is generally well detained when good cultural practices including good pruning are applied together with timing of chemical applications (Firestop or Quinolate) (determined according to Thomson et al mean temperature prediction system). In this way, only 1-3 applications are required instead of 7-9 on routine base.

Under the provisions of the scheme for the replacement of the susceptible to fire blight pear and apple cultivars, the uprooting of about 5,000 trees, severely damaged by previous year infections, was subsidized. In addition, the purchase and planting of about 2,200 young trees was also subsidized, for the replacement of the uprooted ones.

*Maria Dimova-Aziz  
Nicosia*

## CROATIA

Fire blight is not yet present in Croatia. Before the war I went to see the infected plantation not far from Zagreb in the Republic of Bosnia. There we made isolations of Erwinia amylovora and introduced the Billing-forecast system. We conducted trials with antibiotics (Kasumin, Streptomycin sulfate, and Flubactin). Unfortunately, owing to the war we can no longer go there.

Bogdan Cujetkovic  
Zagreb

## BULGARIA

Fire blight had been detected in two places in the central part of our country, first by Dr. S. Bobev in quince and later by Dr. Bogatsevska in pear. The two regions were at a distance of 10 kilometers. There are no data about the spread of fire blight in other hosts of Rosaceae family. In the autumn of 1991 both diseased orchards were uprooted.

Roumen Penev  
Plovdiv



Location of fire blight in Bulgaria.

## MEXICO

Fire blight has been reported and identified on pear, apple, quince and firethorn in Mexico. The states in which fire blight has been present until now are the following:

	Apple ( <i>Malus</i> )	Pear ( <i>Pyrus</i> )	Quince ( <i>Cydonia</i> )	Firethorn ( <i>Pyracantha</i> )
1. Chihuahua	+	+		
2. Durango	+	+		
3. Zacatecas	+	+		
4. San Luis Potosi		+		
5. Jalisco		+		
6. Michoacan	+	+		
7. Mexico	+	+	+	+
8. Puebla	+	+		
9. Hidalgo			+	

*Leopold Fucikofsky*  
*Montecillo*



Distribution of fire blight in Mexico.

## BELGIUM

Many problems of fire blight on young 'Conference' pear trees between 2-10 years old. Infections during secondary blossom in August-September. Formation of cankers on the trunk, many of them with undetermined margins. No symptoms on the leaves during the first week after infection. This makes detection in early stage very difficult. Sporulation on the cankers early in season: many filaments (yellow or white). A close observation is necessary to detect them. The presence of some cankers of this type during primary bloom led to losses of 300-400 trees per ha due to massive primary blossom infections.

**Tom Deckers**  
St. Triuden

## NORWAY

During 1991, fire blight was not observed outside the original area, and within the area, only few new incidents were found. The eradication program is continued. The two most important hosts, Cotoneaster bullatus and C. salicifolius, are now almost completely removed from the district.

**Arnold Sletten**  
As

## ISRAEL

Fire blight was more severe in 1991 than in previous years. After the very few infections of pear blossoms in 1989 and 1990, Erwinia amylovora infected many pear and apple orchards. The disease was prevalent in apple orchards in regions where the disease had not been detected in the past. In some apple orchards in northern Israel (Galilea and the Golan Heights), hundreds of trees were infected with fire blight. Cv. Jonathan was the most infected apple variety but Granny Smith, Golden Delicious and even Red Delicious cultivars were infected. In some trees more than 50 strikes were evident, but none of the apple trees died. First fire blight symptoms were evident in pear orchards, three weeks after the bloom period. It is assumed that the rains of 21-24 March during the pear-bloom period incited the disease. Rainy days and high temperatures occurred on 9-10 April during the early bloom period of the apples. Fire blight was evident in apple orchards during May. It is suspected that streptomycin resistance of E. amylovora is the cause of unsatisfactory control of fire blight in two pear orchards in the south where the disease was found in 1986 and since then 3-5 streptomycin treatments were applied annually. Resistance monitoring and research is being conducted.

**Ezra Shabi**  
Bet Dagan

## ITALY

In 1991, some infections of fire blight, much less severe than in 1990, were observed in the Puglia region on pear trees cv. 'Bella di Giugno', 'Dr. Guyot' and 'Williams'. The disease did not spread outside the points where the first outbreak was reported near Lecce. The pathogen was not detected on the cvs. 'Coscia', 'Abate Fetel', 'Precoce Morettini', 'Butirra Giffarda', 'Melfi', 'Santa Maria', (Cariddi and Piglionica, 1991).

In May 1991, a new focus was discovered in Sicily (district of Messina, near Messina). The disease was observed on about 2% of 4 years old pear trees cv. 'Bella di Giugno' and 'Faccia di Donna' grown in an orchard of about 4 hectares. At the end of June, wide cankers associated with copious ooze were seen even on the trunks. Infected trees were destroyed.

In the summer 1991 (Curto, 1992), phytosanitary inspections carried out by the Osservatorio per le Malattie delle Piante of Bologna (OMP-BO) led to the discovery of symptoms of fire blight on hawthorns imported from Holland (once again) and transplanted in the nursery just some weeks before. The whole lot of plants was destroyed; careful inspections done within a range of 4 miles were always negative.

*Carlo Bazzi  
Bologna*

## SWITZERLAND

In Switzerland, fire blight has not extended more than in the last two years before. The disease is limited in the Northeast, in the region of the lower Bodensee. In 1991, for the first time, fire blight was found in a Conference pear orchard. When the disease was detected, some trees were immediately removed. Fire blight was found again on Cotoneaster dammeri. In our monitoring program we proved once more epiphytic *E. amylovora* in two cases on C. salicifolius. The law has not changed: no imports of host plants are allowed (except for quarantine measures) and strict field controls have to be done. The monitoring program is going ahead.

*Richard Grimm  
Wadenswil*

## PENNSYLVANIA

Environmental conditions were highly favorable for blossom blight during full bloom stage. Blight occurred on pear and on susceptible cultivars of apple (York Imperial, Jonathan, Gala, Rome Beauty) in blocks previously infected with blight. Some shoot blight occurred but was not of major incidence.

*Kenneth Hickey  
Biglerville*

## ENGLAND

In general, in S.E. England in apples and pears the weather has not been favorable for fire blight over the last two seasons. In 1990 temperatures were favorable, but lack of rain made outbreaks very sporadic. In 1991, temperatures were very low until July when conditions became more favorable, but by then the apple and pear trees had slowed down growth and there was less susceptible tissue available for infection. Outbreaks were therefore again sporadic.

There is a high level of inoculum in hawthorn hedge, which given favorable conditions at pear primary blossom time, could result in severe losses. So far conditions have not been favorable at this time of year, but the potential remains.

*Angela Berrie  
Ashford*

Established in England and Wales in the area outside the Fire Blight Free Region (Northumberland, Cumbria, Tyne and Wear, Durham, Cleveland and N. Yorks excluding Dist. of Selby and Borough of York). Elsewhere of sporadic occurrence as introduced on imports. Outbreaks in the FBFR are believed to have been eradicated.

No records as yet from Cornwall.

*David Ebbels  
Harpden*

Hawthorn (*Crataegus*) trees in a limited area of Kent are regularly observed. In 1991, very few new infections were seen. Blossom infections were present on a few early flowering trees which had open flowers in mid-April when there was a three day warm period (maximum temperatures 20-21°C). For most of the main flowering period, temperatures rarely exceeded 15°C. Disease progression in stems (arising from 1990 infections) was seen from mid-April onwards and some trees showed moderate die-back of small branches by July.

*Eve Billing  
Tonbridge*

## WASHINGTON

Early blossom period warm weather caused minor fire blight problems in some pear and apple orchards, but spring weather turned cooler than normal until mid-June, helping us avoid more general problems. Apples most affected were older Jonathans and Young Galas. Vigorous 2nd year Galas were damaged severely or killed in a few isolated instances. Except in these early, warm areas fire blight was at its lowest level in years in Washington State pears and apples.

*Tim Smith  
Wenatchee*

## SWEDEN

Due to the very cold spring and start of summer 1991, the outbreaks of the disease were very limited. During 1991, we found some new locations on the west coast in Sorbus aria.

The usual survey was carried out during the growing season in orchards, plantations and especially in nurseries.

**Maria Graberg**  
Jonkoping



Distribution of fire blight in southern Sweden.

## INDIANA

For the 1991 growing season fire blight was moderate to severe in many northern Indiana apple orchards. The full bloom period coincided with ideal conditions for infection, resulting in the above normal occurrence of fire blight for northern Indiana.

*Paul Pecknold  
West Lafayette*

## OHIO

1991 was a year of severe fire blight in many locations throughout Ohio. Incidence was scattered, but where it occurred it was very severe.

Dr. Steiner's Fire Blight model did a good job of indicating high risk periods in bloom.

*Mike Ellis  
Wooster*

## SOUTH CAROLINA

Increasing plantings of susceptible cultivars like Fuji, Granny Smith, Braeburn, etc. the predominant root stock is 7A. Some Asian pear plantings are escaping with zero incidence of fire blight despite presence of bacterium in other nearby hosts. We are encouraged with the "Maryblyt" program and are setting up radio operated weather station network to provide real time weather information.

*Walker Miller  
Clemson*

## MICHIGAN

Fire blight was a major problem on apples in southwest Michigan in 1991 where losses were estimated at \$3,863,870 by local extension personnel. Multiple infection periods (daytime temperatures in the mid-80's and rainfall or fog) were ideal for blossom infections and secondary spread to shoots. Additional factors that contributed to the epidemic were unusually high winds and driving rain in mid-summer. Many orchards that escaped infection at bloom developed severe infection including infection to the rootstocks. However, the disease was a minor problem on pears.

More outbreaks of streptomycin-resistant *E. amylovora* were detected in 1991. We are continuing research of the molecular genetics of this resistance.

*Alan Jones  
East Lansing*

## NEW BRUNSWICK

Fire blight is not a problem in New Brunswick. I have contacted other researchers in this regard and they too are of this opinion. The only fire blight we have in the province is that which comes in on plant material from abroad. It doesn't seem to overwinter here. This also seems to be the case in Nova Scotia, our neighbouring atlantic province.

*Jean Pierre Prive  
Bonctouche*

## NOVA SCOTIA

Fire blight was once again present as a twig blight on a couple of farms in the center of the Annapolis Valley. The disease intensity was very low and this may have been the result of a dry summer with low humidity. The disease does not appear to move from infected pears to adjacent apples or from apples to pears. The disease continues to be confined only to a couple of farms.

*Gordon Braun  
Kentville*

## BRITISH COLUMBIA

The present status of fire blight in British Columbia is that it occurs but has not been a serious problem for pear growers. Pear acreage has been decreasing in recent years due to problems unrelated to fire blight. For the first time in this region fire blight occurred on Gala apples causing extensive damage in a young planting.

*Peter Sholberg  
Summerland*

## ALBERTA

In central Alberta (Edmonton), fire blight can be severe on raspberries, particularly c.v. Boyne. Severe flower (blossom blight) can reduce fruit set to less than 10% of expected yield - bees do a very good job of dispersal! Small fruit growers do not notice this unless it is specifically pointed out. Canes look healthy except for dead flowers (no berries). A gold cultivar ('Rocky mountain' or 'Honey queen')(not sure of c.v.) seems much less susceptible. Only 10 to 30% loss, whereas 'Boyne' could lose 100% of flowers in same planting. Could be resistance or time of flowering? Up to 50% of current season canes of c.v. 'Boyne' may blacken and die back (fire blight) in some seasons. Growers are reluctant to believe that this is fire blight. Raspberries are very common wild fruits in Alberta (good medium sized berries)

*Ieuau Evans  
Edmonton*

## ONTARIO

Weather. Warm temperatures and adequate rainfall initiated an early spring with degree days ( $>5^{\circ}\text{C}$ ) 14-20 days ahead of normal by June 16. High temperatures ( $>30^{\circ}\text{C}$ ) and humidity were persistent throughout the summer. In the extreme southwest, drought conditions occurred from mid-June through August.

Phenology. Warm temperatures in early spring forced bud break in the first week of April in Essex/Kent, followed by other parts of the province later in the month. Warm temperatures in late April initiated bloom in pears followed by bloom in apples in May. Petal fall was complete in apples by mid-May in Essex/Kent and by the third week in many other locales west of Toronto. Accumulated heat units by June 16 were ahead of normal by 33% in Smithfield and 47% in Simcoe. By harvest the accumulated heat units above normal resulted in harvest being 10-14 days ahead of normal.

Fire blight. During the pear bloom average temperatures were usually below  $15^{\circ}\text{C}$  with little rainfall. Pear blossom blight was not a major threat in most areas of Ontario except in Niagara where conditions were slightly more favorable for blossom blight. In contrast, weather conditions during apple bloom were almost ideal for fire blight infection and spread. Average temperatures were very often above  $18^{\circ}\text{C}$ , frequent rainfall occurred, and pollinating insects were very active.

Blossom blight was first observed May 21 in Essex Co. on 'Paulared' apple. This was followed by observations of canker blight on May 23 and shoot blight on May 27. The week of May 26 recorded reports of fire blight from Norfolk Co., Niagara region, and Wentworth Co. By the week of June 2, fire blight infections were also being reported from the Middlesex area on apples. By the week of June 9, fire blight was becoming serious in areas west of Toronto and several reports were also received from Grey Co. and the Bay of Quinte area. By mid-June, fire blight had occurred in all apple-growing regions, however, regions north and east of Toronto did not have any serious problems that could not be contained.

The 1991 season was one the worst seasons for fire blight during the past 15 years. Ideal disease conditions during apple bloom were probably responsible for initiating fire blight disease in the blossoms of apples, especially susceptible cultivars. The conditions for blight were a source of inoculum, pollinating insects, warm temperatures, adequate moisture, and susceptibility. Disease severity varied among orchards as a result of variations in the factors mentioned above. Many orchards west of Toronto sustained damage as a result of fire blight being initiated during bloom and continuing to be spread during the growing season. Damage ranged from light infections to severe damage of fruit clusters, shoots and supporting branches and limbs. Significant tree loss has occurred in Essex, Middlesex, Norfolk, Niagara, and Wentworth areas.

Very little control of fire blight during the blossom period was attempted in Ontario in spite of good conditions for fire blight infection and OMAF Agriphone warnings. Streptomycin was applied, however, when numerous infections started to appear in orchards in June. Breaking out/pruning out

infections was practiced to remove the sources of inoculum. Attempts to stay ahead of the disease were largely futile as infections kept on appearing in the tender young shoots of actively growing trees. Fire blight did eventually slow down in July with the arrival of hot dry weather but not before damage had occurred, especially in young susceptible trees.

**Gordon Bonn**  
*Harrow*

## AUSTRIA

No fire blight detected in Austria.

**Marianne Keck**  
*Vienna*

## PORTUGAL

As far as I know, fire blight did not yet occur in Portugal.

**J.M.S. Martins**  
*Oeiras*

## SOUTH AFRICA

Fire blight does not occur in South Africa. However, Erwinia amylovora is regularly isolated from vegetative propagating material and seed (especially apple) shipped to South Africa.

**Martin Hattingh**  
*Stellenbosch*

## AUSTRALIA

1. As to my report fortunately there has been no change to Australia's fire blight - free status:

"Fire blight has not been recorded in Australia and stringent quarantine procedures apply on the import of susceptible host material".

2. Dr. Satish Wimalajeewa, Institute of Plant Sciences, Knoxfield, Victoria is planning:

(a) A study to assess the "Maryblyt" system in the Goulbourn Valley of Victoria. [This region produces some 85 percent of Australian pears and 10 percent of the nation's apples and is climatically "highly conducive to the establishment of and continued reinfection by fire blight" (Kilminster 1989).] and

(b) A survey of epiphytic bacteria present on pome fruit in the region.

**David Cartright**  
*Adelaide*

## PEOPLES REPUBLIC OF CHINA

Fire blight has not been recorded in P.R. China. As the Law on quarantine of Animal and Plant Exits and Entrances, PRC has passed, Erwinia amylovora is on the A1 lists, more stringent quarantine measures will apply on the import of susceptible host materials.

*Youfu Zhao  
Beijing*

## ALGERIA

Fire blight is not observed for the moment in our region.

*N. Nassan-Aga  
El-Harrach*

## OREGON

Conditions during the 1991 bloom were cool and not favorable for fire blight development throughout Oregon. Many samples were received from growers inquiring about fire blight. Most of these diseased plant samples were due to another common bacterial pathogen, Pseudomonas syringae.

Medford (Rogue River) Area - Dr. David Sugar reports that it was a "mild" fire blight year and that only a few cankers were found in commercial orchards.

Hood River Valley - Dr. Bob Spotts reports that very little fire blight was observed. A few cankers were found in five orchards. None of the isolates were resistant to streptomycin.

Milton-Freewater Area - Tom Darnell reports that only one strike was found in the area on apple.

*Jay Pscheidt  
Corvallis*

## VIRGINIA

Very concerned about loss of trees to fire blight in high density plantings. In one planting of Redchief (Campbell strain)/M26, tree loss was 1.7% (750 of 44,000 trees) due to blight in the rootstock.

*Keith Yoder  
Winchester*

## DETAILS ON CURRENT FIRE BLIGHT RESEARCH REPORTED FROM UNIVERSITIES AND EXPERIMENT STATIONS

### GREECE

The current fire blight research projects in Greece are:

1. Screening different epiphytic bacteria for in vitro and in vivo inhibition of Erwinia amylovora for biological control purposes (Benaki Phytopath. Inst.).
2. Streptomycin resistance among Erwinia amylovora strains from different areas of Greece.
3. Breeding for fire blight resistance in pears. (Pomology Institute of Naoussa).
4. Chemical control of E. amylovora and varietal susceptibility to fire blight of different host plants of Mediterranean origin. (Plant Protection Inst. of Volos).
5. Climate and fire blight epidemics. (Benaki Phytopath. Inst.).

*P. G. Psallidas*  
*Benaki Phytopath. Inst.*

### POLAND

1. Observations on fire blight activity and development upon phenology of apples, pears and hawthorns.
2. Screening for selection of effective chemicals against fire blight.

*P. Sobczewski*  
*Res. Inst. of Pomol.*

### GERMANY

A new sensitive detection method by PCR-analysis for the monitoring of fire blight was developed by the working group Geider (Heidelberg). Studies on the resistance-induction effect of plant extracts on E. amylovora were undertaken by the group of Zeller/Mosch in Dossenheim and Darmstadt. First results showed a higher activity of some enzymes of the phenol metabolism between 1 and 4 days after exposure of extracts.

*W. Zeller*  
*Biol. Bundesanstalt*

As a consequence of the reunification of Germany the BZA Berlin and the Institut fur Phytopathologie Aschersleben have finished their activities on December 31st, 1991. However, with the beginning of 1992 the new Federal Institution for Breeding Research on Cultivated Plants was founded. Three institutes of this organization are located at Aschersleben (Institut fur Pathogendiagnostik, Institut fur Epidemiologie, Institut fur Resistenzforschung). In cooperation with Mrs. Prof. Fischer (Institut fur Obstzuchtung Dresden-Pillnitz), Dr. Richter (Institut fur Epidemiologie) will continue his work concerning the development of cultivars with resistance against fire blight in apple and pear.

**K. Naumann**  
*Bundesanst. fur  
Zuchtforschung*

## ITALY

a) As already mentioned in the previous newsletter, the Italian Ministry of Agriculture has issued directions for the compulsory eradication of the disease (uprooting and destruction of the infected trees) in the Puglia region. These directions are enforced with the support of the special decree issued by the regional government on December 1990.

Starting since late July 1990, antisera produced at the Department of Plant Disease Protection in Bari, are currently used for monitoring the presence of the pathogen.

b) Phytosanitary inspections in nurseries and orchards led to the discovery of the new occurrence of fire blight in Sicily and the interception of infected hawthorns imported from Holland. In both cases blighted plants were promptly destroyed.

c) The breeding program for fire blight resistance is still in progress at the Istituto Sperimentale per la Frutticoltura in Rome (EEC Fire Blight Working Group). On September 1991, the evaluation of about 5800 seedlings was at the end of the second year of inoculation; the remaining seedlings (about 800), need one more year of observation. In cooperation with the Centers in Dax (France) and Naoussa (Greece) it will be possible to evaluate fire blight resistance as well as the agronomical aspects of the most interesting seedlings or Italian varieties in different climates.

d) A fire blight monitoring network was set up in Northern Italy in 1991, but this system will soon cover all of Italy, and in particular the most important fruit-growing areas. One of the main aims of the Italian network is the prompt detection of primary foci of the disease for the application of coordinated control strategies.

e) An assessment of the origin of some species of birds, potential vectors of the bacterium during their migration across Italy has been done in cooperation with ornithologists of the Istituto Nazionale di Biologia della Selvaggina (Ozzano dell'Emilia, Bologna).

Topics d), e) will be presented at the 6th Int. Workshop on fire blight in Greece.

*C. Bazzi*  
*Istit. Patol. Veget.*

## **BULGARIA**

1. Serological diagnostic methods for *E. amylovora* and possibilities of chemical control. (Agricultural University, Plovdiv).

2. The effect of climate on the development of fire blight and evaluation of the susceptibility of local cultivars and selections. (Fruit Growing Institute, Plovdiv).

*R. Penev*  
*Fruit Grow. Inst.*

## **ENGLAND**

At Wye we do not carry out research on fire blight, but make use of Billings Risk assessment system for meteorological stations in our area in order to produce warnings of fire blight risk for growers.

*A. Berrie*  
*Wye College*

## **OREGON**

Dr. Bob Spotts continues to evaluate the new Maryblyt program. A few strikes were reported but the program did not identify any potential infection periods. Some high risk days were detected. This program will again be evaluated this coming growing season.

Dr. David Sugar is evaluating varieties from various breeding programs for fire blight resistance in the Medford area.

Drs. Ken Johnson, Virginia Stockwell, and Joyce Loper are continuing research on biological control transmission by honey bees and screening isolates for resistance to bactericides.

*J.W. Pscheidt*  
*Oregon State Univ.*

## PENNSYLVANIA

Results from research by Gregory G. Clarke (Penn State Doctorate Thesis Research) on the role of aphids in transmission of E. amylovora, showed that green apple aphids were unable to vector the pathogen in the conventional manner of acquisition, migration, and injection. Various type tests, including membrane fed aphids, aphid feeding wounds as points of entry, and aphid colony transfer from infected to healthy shoots, failed to result in any infection resulting from vectoring by aphids. In separate shoot syringe-inoculations, the number of colony forming units required for infection was  $1 \times 10^4$  or more. A single cell or concentrations of  $10^1$ ,  $10^2$ ,  $10^3$  failed to cause blight in shoots of 'York Imperial' apple.

The development of a computerized decision support system for fireblight management will be ready for field validation in 1992. The system will be incorporated into the existing Penn State Apple Orchard Consultant (PSAOC) where users can choose to run the fire blight module separately as they would for apple scab or powdery mildew, or as part of the IPM module which provides management information about all disease and insects. The fire blight module will assess orchard risk at the beginning of the season by evaluating the relative susceptibility of cultivars and rootstocks, the recent history of fire blight in the orchard, the nutritional status of trees, and certain site characteristics. During bloom, the system will use weather data to evaluate the daily risks for blossom infections and give recommendations for treatment when necessary. After the blossoming period the system will provide recommendations for managing fire blight using a variety of cultural methods, and suggest control strategies in the event of hail or other trauma. The system will also have an educational module where users will be able to access detailed information about the disease and various aspects of its management.

*Ken Hickey  
Penn State Fruit Res. Lab.*

## WASHINGTON

Renewed interest in fire blight research has attracted some new people this past 2 years. In the pacific northwest we now have research on biocontrol and epidemiology with ever increasing funding and effort.

Below are listed the new researchers and their general interests:

Dr. Gary G. Grove, Assistant Plant Pathologist, Washington state University, Tree Fruit Research and Extension Center. 1100 N. Western Avenue, Wenatchee, WA 98801. Epidemiology-Prediction.

Dr. Randy McLaughlin - Plant Pathologist, USDA-ARS, Tree Fruit Research Center, 1100 N. Western Avenue, Wenatchee, WA 98801. Biocontrol-antagonists.

*T. Smith  
WSU Extension*

## MARYLAND

Maryblyt<sup>TM</sup>, Version 4.0, a comprehensive computer program for predicting specific infection events and symptom development for most phases of fire blight epidemics in apples and pears is now available commercially. The program has been the principal basis for recommendations on fire blight control to Maryland fruit growers since 1989 and has resulted in both a marked improvement in the level of control-obtained and a reduction in the number of antibiotic sprays applied compared with conventional treatment programs.

One of the unique features of Maryblyt<sup>TM</sup> is that it identifies specific infection events and predicts the appearance of four distinct types of fire blight symptoms: blossom, canker, shoot and trauma blight. The program can be operated in real time to assess the current risks and progress of an epidemic, and in a simulation mode for predicting future events using forecast weather data. Information generated in both modes provides a basis for making decisions on when to make specific control treatments and when it is reasonably "safe" to delay those treatments.

The Maryblyt<sup>TM</sup> program is fully compiled in Turbo-Pascal and can be operated with any IBM or IBM-compatible personal computer, including most laptop models. It requires a RAM capacity of 640 kilobytes (kb) and a VGA (preferred), EGA color or a monochrome monitor. The program can be operated directly from a floppy disc or, for faster operation, from a hard disc. The compiled program requires about 170kb of disc space and individual files normally range from 3 to 6 kb.

Daily information on temperature, rainfall and other significant weather events (dew, hail, damaging winds) along with key observations on apple and pear bud development are needed to use the program. For this reason, the user should consider investing in a reliable on-site recording weather station. All weather data can be entered or retrieved in either English or metric units.

Maryblyt<sup>TM</sup> is available through the University of Maryland Office of Technology Liaison, 4312 Knox Road, College Park, Maryland 20742 [telephone: 301-405-4210, telefax: 301-314-9871].

*P.W. Steiner  
Univ. of Maryland*

## NETHERLANDS

In the Netherlands no new fire blight research projects have been started in 1991. In October 1991 our trial plot in Ouwerkerk (Zeeland) has been closed down.

*M. van Teylingen  
Plant Protect. Inst.*

## AUSTRALIA

Peter Fahy and Mike Gillings of Biological and Chemical Research Institute, PMB10, Rydalmere NSW 2116, Australia have initiated a study to examine the diversity of Erwinia amylovora using genomic fingerprints, fatty acid profiles and nutritional tests. They aim to examine cultures from as wide a range of sources as possible and to include "amylovora like" bacteria. They would appreciate contact with anyone with interesting cultures or host isolations.

*D. Cartwright*  
S.A. Dept. of Agric.

## **MISCELLANEOUS NEWS**

Dr. Timur Momol, from the University of Akdeniz, Turkey, spent three months with Dr. W. Zeller at BBA, Institut fur Pflanzenschutz im Obstbau, Dossenheim, Germany. (Disease Progress Curves and Control of Fire Blight).

Dr. P.G. Psallidas, Dr. J. Tsiantos and Dr. S. Manganaris participated in the meeting of Contractants of EEC-DG VI "Fire blight" Contract 8001-CT91-0203, organized by Dr. J.P. Paulin (Coordinator of the program) in Dax on Octóbér 29 and 30, 1991.

Dr. P. Sobiczewski spent 15 months (July 1990-September 1991) in the laboratory of Professor Alan L. Jones at Michigan State University doing research on streptomycin resistant epiphytic bacteria in Michigan apple orchards and on susceptibility of cherries to bacterial canker and frost.

On the way back to Poland he visited Dr. T. van der Zwet and Dr. W. J. Janisiewicz at AFRS Kearneysville and Professor P. Steiner at University of Maryland, College Park, where he presented a seminar entitled: "Streptomycin Antibiotic Resistance in the Pathogen, Erwinia amylovora, and Non-Pathogenic Epiphytic Bacteria Common to Apple Foliage".

Dr. Henk Schouten has stopped doing fire blight research in The Netherlands and is saying farewell and good luck to all his friends and colleagues in the fire blight working group.

A national meeting on fire blight was held in Ladenburg near Heidelberg from June 13-14, 1991 under the guidance of Dr. W. Zeller, Dossenheim. Forty-five participants were discussing new aspects of the disease: distribution in the west and east part of Germany with measures of control, Epidemiology, Control, Diagnosis, Physiology and Genetics, Resistance. Twenty-two papers were presented.

Dr. Zeller visited from November 8-15th the University of Alexandria, Egypt. With colleagues of the Department of Plant Pathology (Prof. Abo-El-Dahab, Dr. A. Shoeib and Dr. El Kazaz) a new program on fire blight research was initiated with the main topics: Forecasting, Resistant Varieties, Biological control.

At the end of 1991, Prof. Dr. H. Kleinhempel, former member of the fire blight group, has finished his work in this field with the liquidation of the Institut fur Phytopathologie Aschersleben.

Prof. R.N. Goodman (Missouri) spent his sabbatical leave for 5 months in Wadenswil.

Dr. David Sugar gave an invited lecture on fire blight control at the first international pear course held in Rio Negro, Argentina, April 1991.

The Australasian Plant Pathology Society Conference which was held in Sydney on October 9-11, 1991 included a symposium on the safe movement of plant materials. Tom van der Zwet provided us with a very polished talk on the various means of dissemination of the fire blight bacterium. A follow up session on fire blight served to highlight just how much we still don't know about the disease.

Professor Jim Cummins visited South Australia in late November 1991 as part of his review of Australia's Pomefruit breeding programs. Professor Cummins visited most States and provided a series of grower seminars on apple and pear rootstocks, fire blight and breeding for disease resistance.

Professor Zhang, Zhiyong, Beijing, PRC passed away on August 25, 1991.

## **LIST OF PERSONS INTERESTED IN FIRE BLIGHT** <sup>1/</sup>

Abo-EI-Dahab, M. K., Plant Pathology Dept., Faculty of Agric., Univ. of Alexandria, Alexandria, Egypt.(71960)	(2)	EGY
Agriculture Canada, Library Records Division, Ottawa, Ontario K1A 0C5, Canada.	(2)	CND
Aldwinckle, H. S., Department of Plant Pathology, N.Y. State Agric. Expt. Station, Geneva, NY 14456. (315-787-2331; FAX: 787-2397)	(1)	USA
Arsenijevic, M., Faculty of Agric., Inst. for Plant Prot., D. Obradovica 8, 21000 Novi Sad, Yugoslavia.(021-58-366)	(2)	YUG
Balavoine, P., Service de la Protection des Vegetaux, Direc. Dept. Agric. et de la Foret, 7 Avenue de Lyon, 73018 Chambery Cedex, France.(79-690545)	(1)	FR
Basim, H., Guvenlik Mahallesi Kazim Karabekir Cad., 256 Sok. No. 2, Hatipoglu Apt. Daire II, Antalya, Turkey	(1)	TUR
Baykal, N., Agric. Univ. Ziraat Fakultesi, Fitopatoloji Kursusu, Ankara, Turkey.	(2)	TUR
<b>Bazzi, C.</b> , Laboratorio Fitobatter., Ist. Patol. Vegetale, via Filippo Re 8, 40126 Bologna, Italy. (051-351446; FAX: 351438).	(1)	ITA
<b>Beer, S.V.</b> , Department of Plant Pathology, Cornell University, Ithaca, NY 14853. (607-255-7870; FAX: 255-4471).	(1)	USA

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1/ Names in ***bold print*** are contact persons for preparation of fire blight newsletter. Numbers in parentheses are local telephone and FAX numbers, and those in column at right indicate activity or interest in fire blight:

1. Actively engaged in fire blight research;
2. Indirectly interested in fire blight;
3. Interested in fire blight, but located in region where disease is not present;
4. Retired but still interested in fire blight activities.

NOTE: For telephone country code numbers, see table at end of this listing.  
For FAX numbers, area or regional code was not repeated.

Bell, R.L., U.S. Department of Agriculture, Appalachian Fruit Research Station, 45 Wiltshire Road, Kearneysville, WV 25430-9802, (304-728-2353; FAX: 728-2340).	(1)	USA
Berrie, Angela M., Minist. of Agric., Fish and Food, Agric Devel. and Advis. Serv., Olantigh Rd., Wye Ashford, Kent, England. (233-812761; FAX: 813346)	(2)	UK
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<u>France</u>	*Paulin, J.P. Balavoine, P. Cadic, A. Chevalier, R. EPPO	Larue, P. Laurent, J. Lecomte, P. Le Lezec, M. Michon, P.
<u>Germany</u> (BRD)	*Naumann, K. *Zeller, W. Dalchow, J. Geider, K. Gessner, E. Graf, H. Knosel, D. Krebs, E.K. Lehmann-Danzinger, H. Mappes, D.	Massfeller, D. Meyer, J. Michel, H.G. Nachtigall, M Richter, K. Rudolph, K. Schlegel, C. Schulz, F.A. Schumann, I.
<u>Greece</u>	*Psallidas, P.G. Manganaris, A.	Panagopoulos, C. G. Tsiantos, J.
<u>Hungary</u>	*Simon, E. Klement, Z.	Nemeth, J.
<u>India</u>	*Gupta, G. K.	Sharma, V. P.
<u>Ireland</u>	*Walsh, P.	
<u>Israel</u>	*Shabi, E.	
<u>Italy</u>	*Bazzi, C. Calzolari, A. Ercolani, G. Fideghelli, C.	Mainolfi, P. Mazzucchi, U. Oberhofer, H.
<u>Japan</u>	*Fujita, K. Inoue, S.	Nishio, T.
<u>Lebanon</u>	*Saad, A.T.	

<u>Mexico</u>	*Fucikovsky, L. Mendoza, H.A.	Nuncio, O.
<u>Morocco</u>	*Chouibani, M.	Saad, B.A.
<u>Netherlands</u>	*Teylingen, M. van Botden, R.J.J. Heybroek, H.M. Janse, J.D.	PUDOC Scheer, H.A.T. van der Vuurde, J.W.L. van
<u>New Zealand</u>	*Hale, C. N.	Drewitt, W.
<u>Norway</u>	*Sletten, A.	Dale, T.
<u>Poland</u>	*Sobiczewski, P.	Burkowicz, A.
<u>Portugal</u>	*Martins, J.M.S. Duarte, T.	Lopes Barardo, R.
<u>Romania</u>	*Suta, V. Richiteanu, A.	Severin, V.
<u>South Africa</u>	*Roos, I.M.M.	
<u>Spain</u>	*Palazon, I. Carrera, M. Lopez Gonzales, M	Mansergas, A.J.F. Noval, C.
<u>Sweden</u>	*Graberg, M.	Persson, P.
<u>Switzerland</u>	*Grimm, R. Bolay, A. Cazelles, O.	Joseph, E. Zaccheo, A.
<u>Taiwan (R. O. C.)</u>	*Linn, C.P.	
<u>Turkey</u>	*Momol, T. Basim, H. Baykal, N.	Cinar, O. Kural, I. Oktem, Y.E.
<u>USSR</u>	*Voronkova, L.	
<u>Yugoslavia</u>	*Panic, M. Arsenijevic, M. Cvjetkovic, B. Markovic, S.	Ognjanov, V. Raukovic, M. Ristevski, B.

**UNITED STATES**

Aldwinckle, H.S.	*Pecknold, P.C.
*Beer, S.V.	*Preiser, F.
Bell, R.L.	*Pscheidt, J.W.
*Biggs, A.R.	Rackman, R.L.
Brown, S.K.	*Ries, S.M.
Bushong, J.W.	*Ritchie, D.F.
Civerolo, E.L.	Rom, R.C.
Cummins, J.N.	Rosenberger, D.A.
*Douglas, S.M.	Sands, D.C.
*Ellis, M.A.	Schroth, M.N.
*Goodman, R.N.	Seem, R.C.
*Hickey, K.D.	Singh, B.P.
Hummer, K.	*Smith, T.J.
Jackson, L.E.	Spotts, B.P.
Janick, J.	*Steiner, P.
*Jones, A.L.	Sugar, D.
Joshi, M.M.	Sutton, T.B.
Kado, G.I.	Swanson, B.T.
Koenigshof, R.	*Thomson, S.V.
Lindow, S.	Travis, J.A.
Lombard, P.	USDA Library
Luby, J.	VanBuskirk, P.D.
McLaughlin, R.	Willett, M.
Mielke, G.	Wodzinski, R.S.
*Miller, R.W.	*Yoder, K.S.
Morton, H.V.	*Young, D.
Norelli, J.L.	Zehr, E.I.
O'Connor, P.A.	*Zoller, B.G.
Opgenorth, D.	Zwet, T. van der

## SUMMARY

### **CONTACT PERSONS FOR FIRE BLIGHT NEWSLETTER**

<i>United States</i>	<i>Other Countries</i>
Arizona	Young, D.
California	Zoller, B.G.
Connecticut	Douglas, S. M.
Illinois	Ries, S.M.
Indiana	Pecknold, P.
Maryland	Steiner, P.
Michigan	Jones, A.L.
Missouri	Goodman, R.N.
New Jersey	Preiser, F.
New York	Beer, S.V.
North Carolina	Ritchie, D.F.
Ohio	Ellis, M.A.
Oregon	Pscheidt, J.W.
Pennsylvania	Hickey, K.D.
South Carolina	Miller, R.W.
Utah	Thomson, S.V.
Virginia	Yoder, K.S.
Washington	Smith, T.J.
West Virginia	Biggs, A.R.
<i>Canada</i>	
Alberta	Evans, I.R.
British Columbia	Sholberg, P.
New Brunswick	Prive, J.P.
Nova Scotia	Braun, P.J.
Ontario	Bonn, W.G.
Saskatchewan	Sawatzky, R.
Sweden	Graberg, M.
Switzerland	Grimm, R.
Taiwan (ROC)	Lin, C.P.
Turkey	Momol, T.
Yugoslavia	Panic, M.
	Algeria
	Argentina
	Australia
	Austria
	Belgium
	Bulgaria
	Chili
	China (PRC)
	Cyprus
	Czechoslovakia
	Denmark
	Egypt
	England
	France
	Germany (BRD)
	Greece
	Hungary
	India
	Ireland
	Israel
	Italy
	Japan
	Lebanon
	Mexico
	Morocco
	Netherlands
	New Zealand
	Norway
	Poland
	Portugal
	Romania
	USSR
	South Africa
	Spain

## SUMMARY

### PERSONS INTERESTED IN FIRE BLIGHT

Country	Interest Category				Total	Number of Contact Persons
	1	2	3	4		
* USA - United States	26	31		1	58	19
* CND - Canada	4	13			17	6
* BRD - Germany	13	6			19	2
* UK - England	6	5		2	13	1
* FR - France	5	5			10	1
* BLG - Belgium	6	3			9	1
* NL - Netherlands	5	2			7	1
* ITA - Italy	2	5			7	1
* YUG - Yugoslavia	1	6			7	1
* TUR - Turkey	5	1			6	1
* SWT - Switzerland	1	4			5	1
* GRC - Greece	1	3			4	1
* EGY - Egypt	1	3			4	1
* MEX - Mexico	2	1			3	1
* CZE - Czechoslovakia	1	2			3	1
* DK - Denmark		3			3	1
* BUL - Bulgaria	2				2	1
* POL - Poland	1	1			2	1
* CYP - Cyprus	1	1			2	1
* NZ - New Zealand	1	1			2	1
* SWD - Sweden		2			2	1
* NOR - Norway		2			2	1
* ISR - Israel	1				1	1
* IRL - Ireland		1			1	1
* LEB - Lebanon		1			1	1
AUS - Australia			5		5	2
SPN - Spain			5		5	1
ROM - Romania			3		3	1
POR - Portugal			3		3	1
JAP - Japan			3		3	1
HUN - Hungary			3		3	1
ARG - Argentina			3		3	1
CHI - China			2		2	1
CHL - Chili			2		2	1
MOR - Morocco			2		2	1
IND - India			2		2	1
OST - Austria			1		1	1
SA - South Africa			1		1	1
USR - USSR			1		1	1
TAW - Taiwan			1		1	1
ALG - Algeria			1		1	1
<b>TOTAL</b>	<b>85</b>	<b>102</b>	<b>38</b>	<b>3</b>	<b>228</b>	<b>66</b>

\* Countries with fire blight.





